



## Food Industry Energy Research (FIER)

---

Topping Cycle Optimization for Can Cooker/Cooler Operation  
US Department of Energy – State Technologies Advancement  
Collaborative (STAC)

California Institute of Food & Agricultural Research (CIFAR)  
University of California - Davis  
Glen A. Lewis – 26 Oct 04

# Topping Cycle Optimization for Can Cooker/Cooler Operation

# Topping Cycle Optimization for Can Cooker/Cooler Operation

- Background
- Primary Objectives
  - *Improve Steam Balance & Efficiencies*
  - *Topping Cycle w/SteamTurbine-Driven Absorption Chiller (75 HP)*
  - *Efficient use of Cooling Tower Water for System Cooling Requirements*
- Next Steps

US Department of Energy

State Technologies  
Advancement Collaborative  
(STAC)

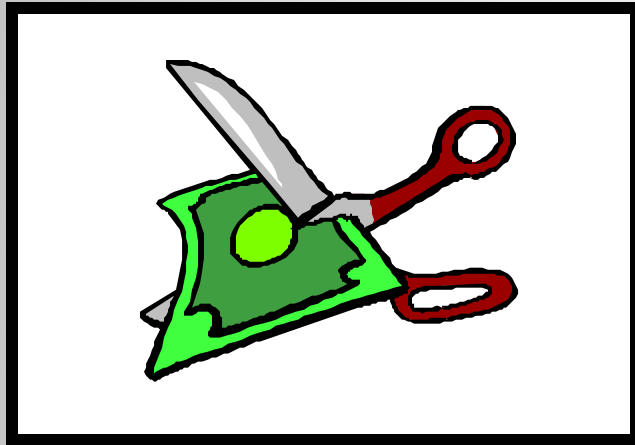
# **STAC Background & Next Steps**

## **Integrated Enterprise Energy Management (EEM) & Enterprise Asset Management (EAM) Demonstration Project**

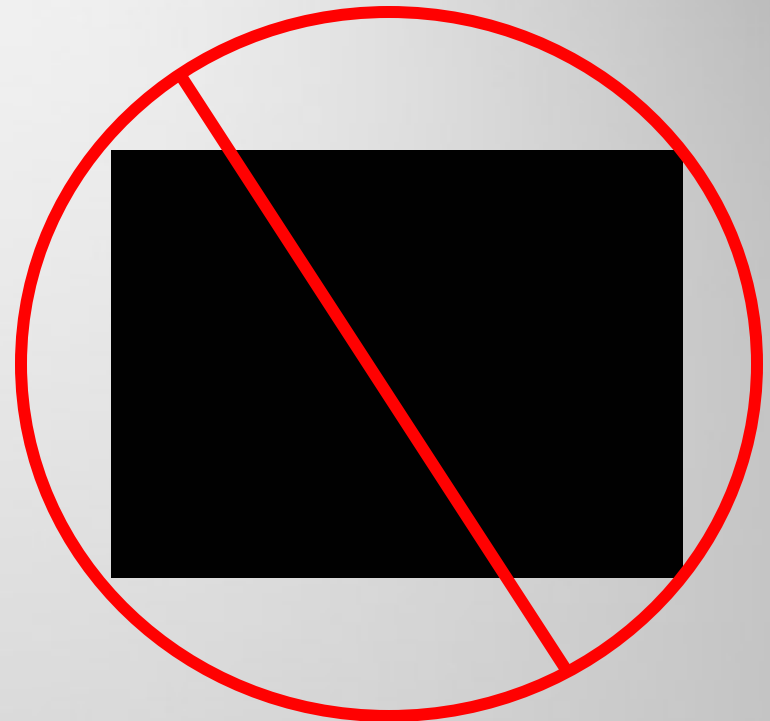
- **STAC Overview & Task Teams**
- **EEM-EAM STAC Demonstration Project Objective**  
*To optimize energy supply & demand-side efficiencies & associated manufacturing assets to yield the lowest-effective plant operating cost.*
- **EEM-EAM STAC Team Members**
  - Del Monte Foods – Team Leader
  - California Energy Commission
  - California League of Food Processors
  - Lawrence Berkeley National Laboratory
- **EEM-EAM STAC Deliverables Timing & Reporting**

# Enterprise Energy & Asset Management Visibility, Metrics & Knowledge

**“Glass Box”**



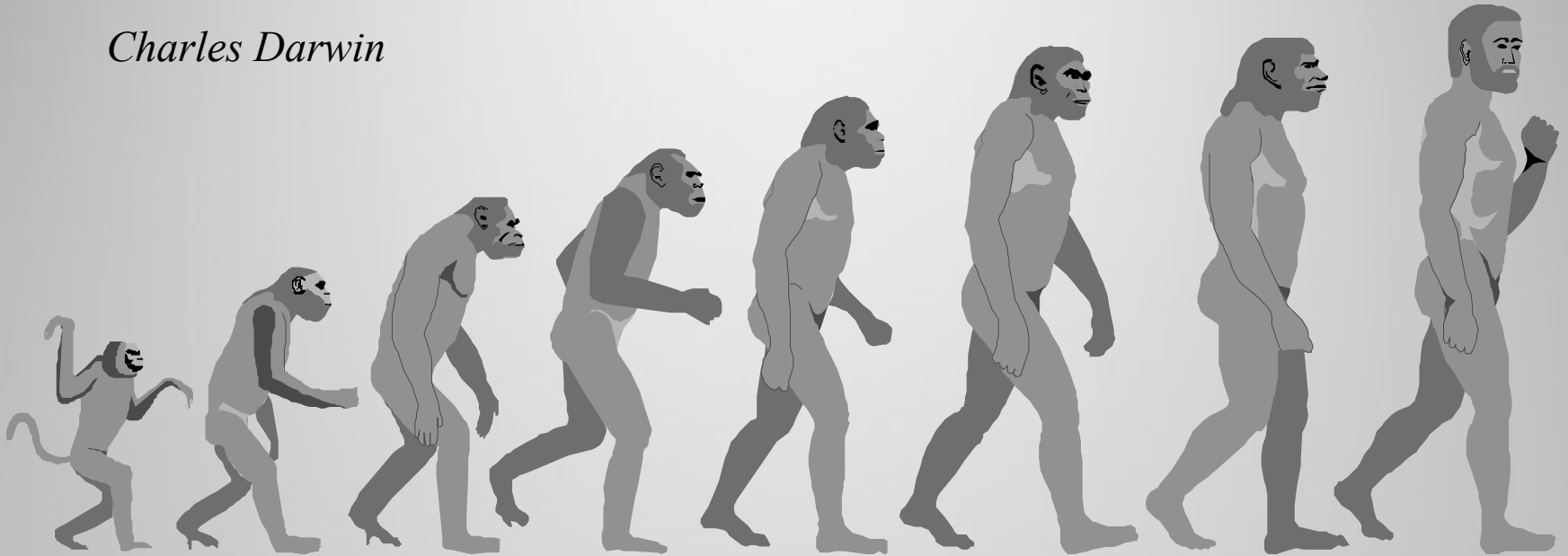
**“Black Box”**



# Food Industry Energy Management & Current Technology Evolution

*"It is not the biggest nor the strongest nor the most intelligent of the species that will survive. It is the species most adaptable to change."*

*Charles Darwin*

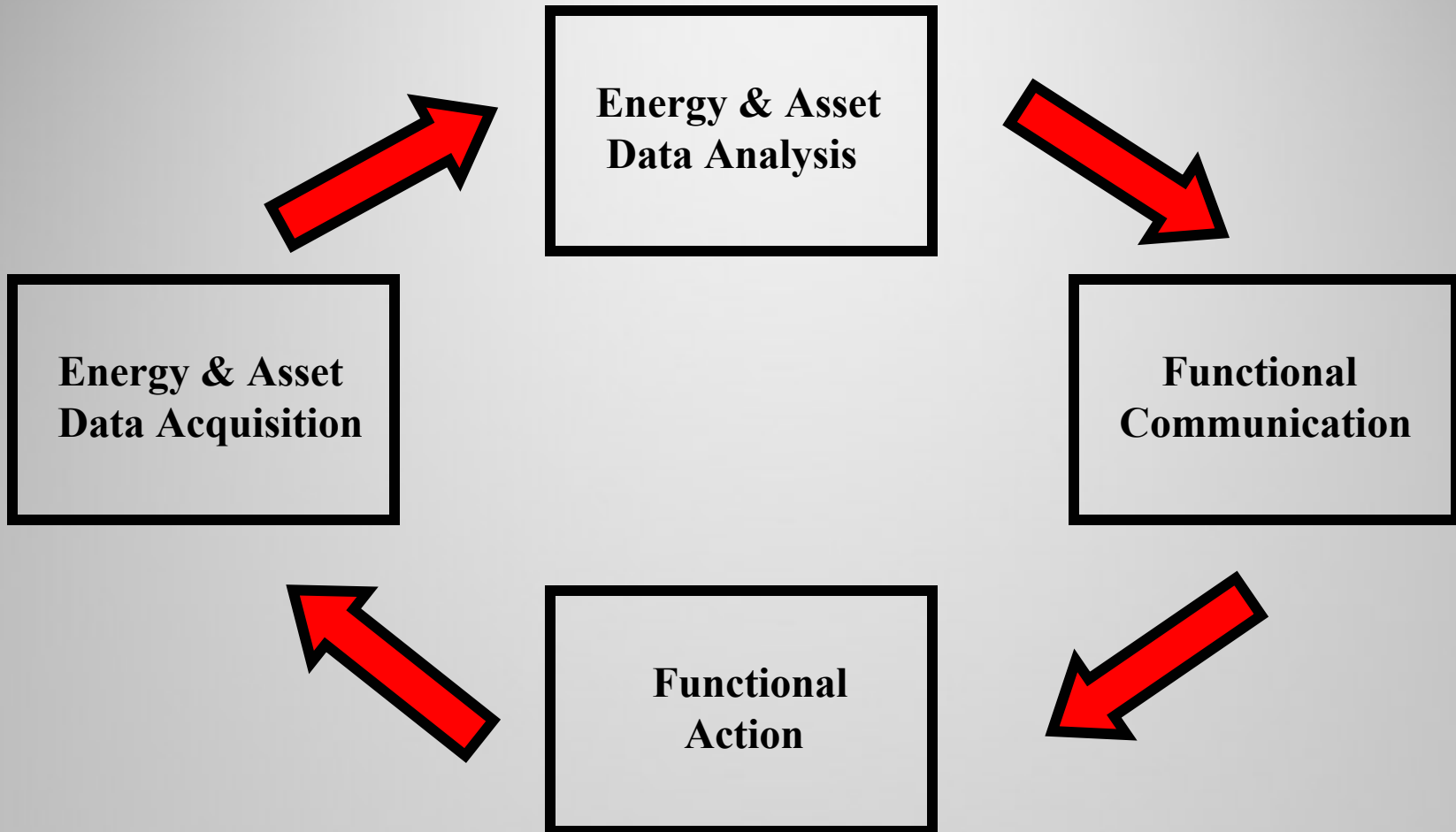


Zero or Reactive Energy  
& Maintenance Management  
(i.e. "Fire Drills")

Manual Energy Mgmt &  
Computerized  
Maintenance Management  
Systems

Realtime Enterprise Utility  
& Predictive/Preventive  
Asset Management Systems

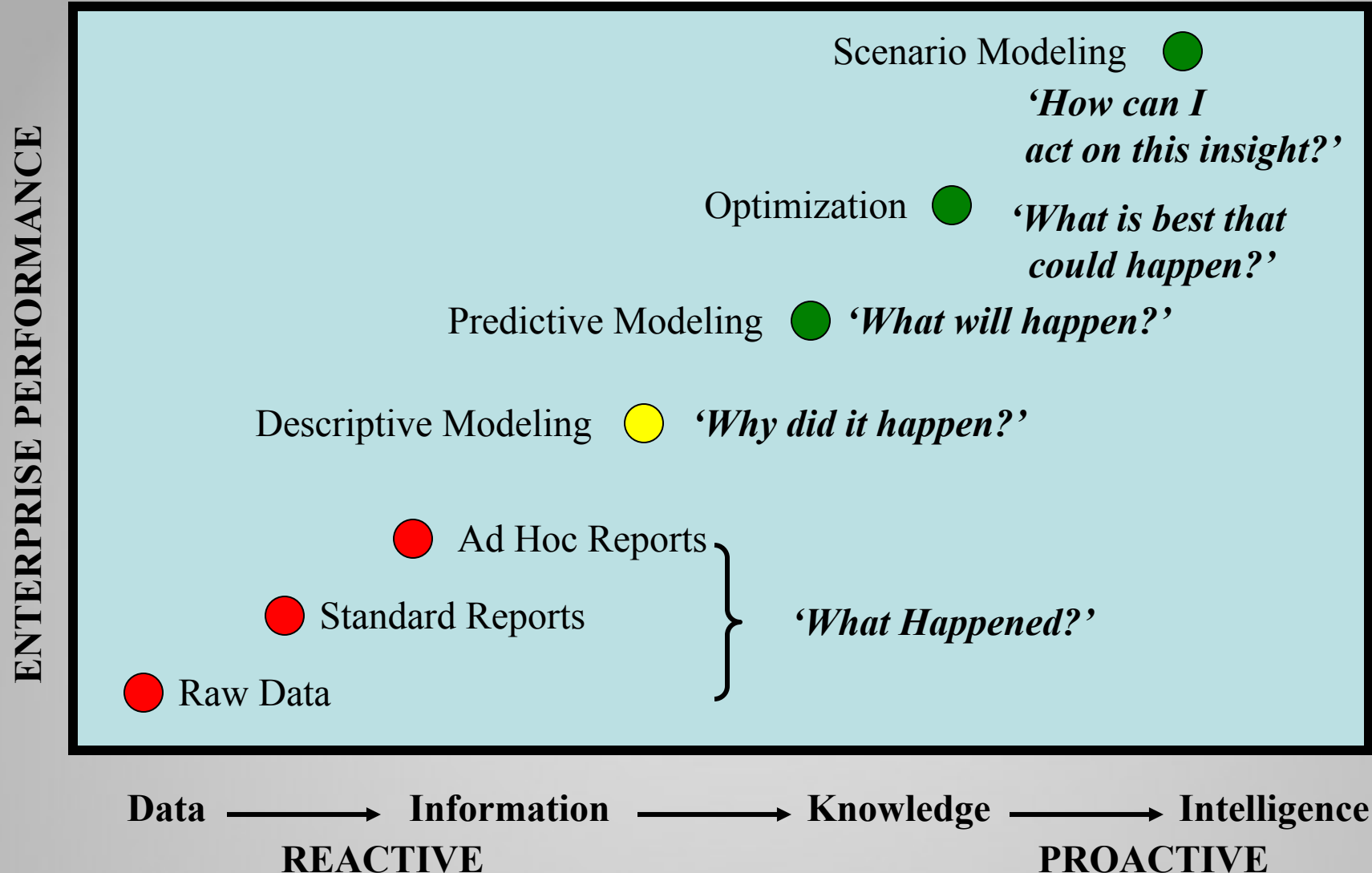
# Energy & Asset Management Operational Cycle





# Energy Management Analytical Direction

## Management Hindsight vs Insight



# Del Monte Foods

## Process Reengineering & Benchmarking

### Intra/Inter-Industry Technology Transfer Examples

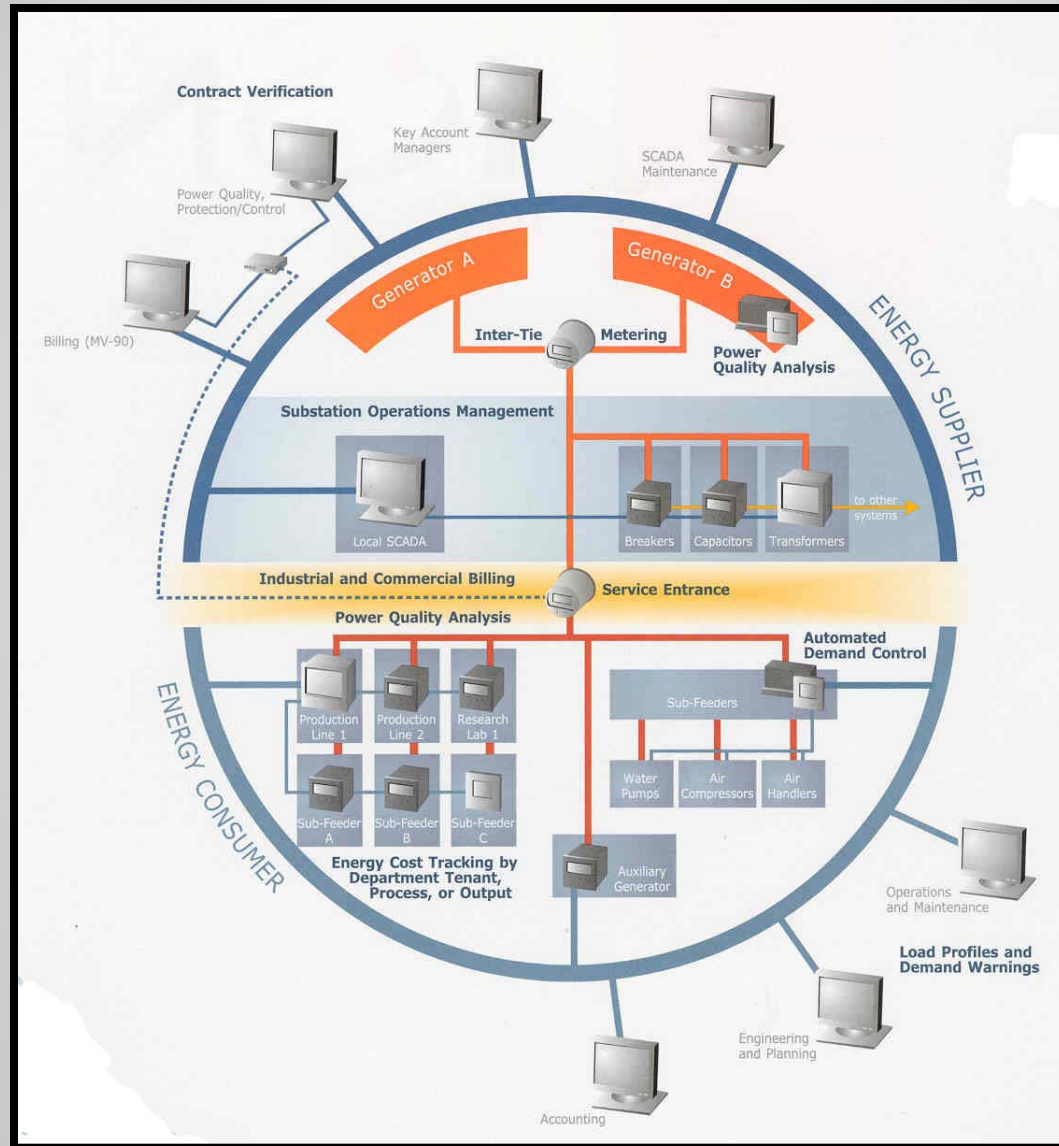


# Basic Energy Management Components

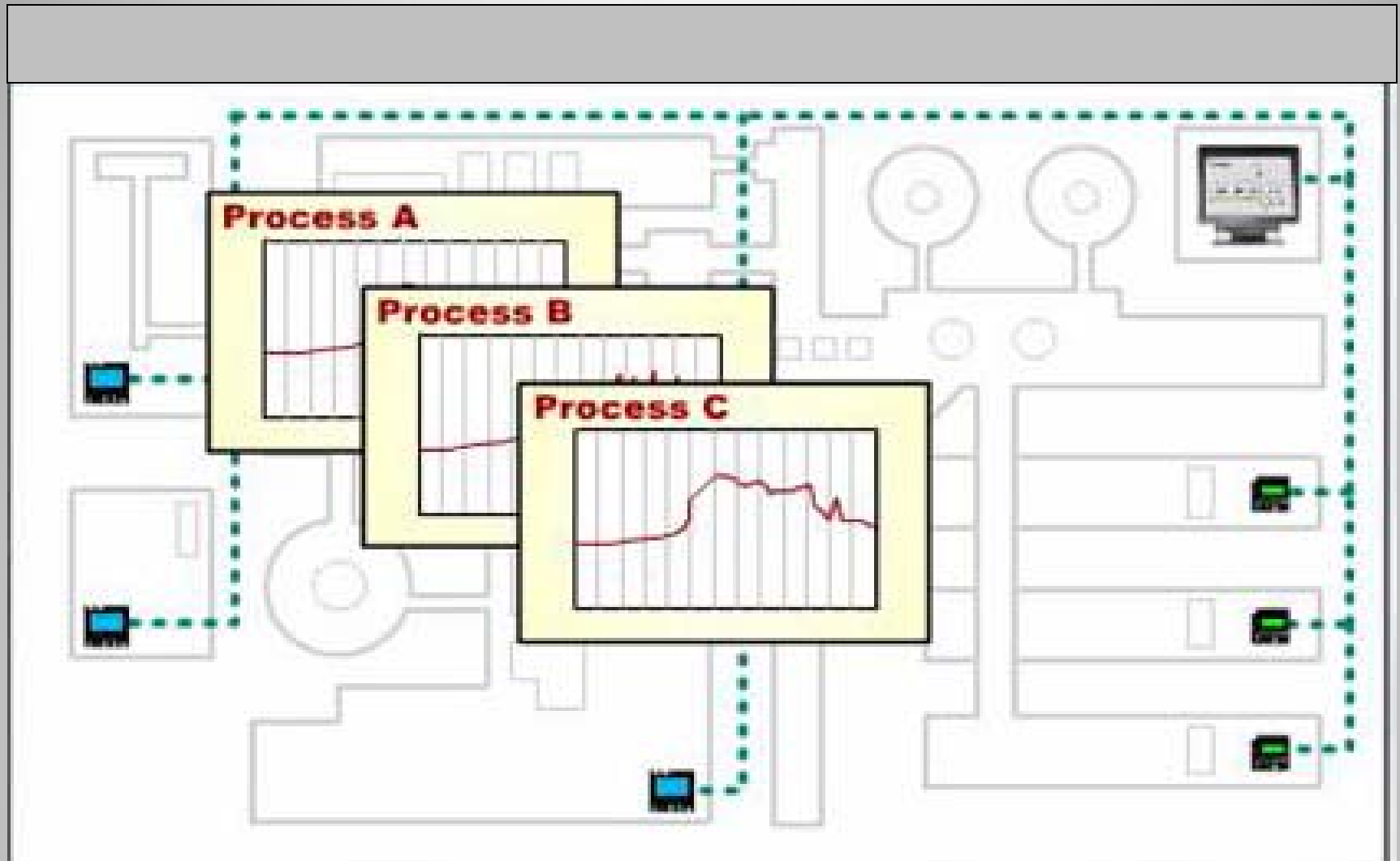
Typical components of WAGES (**W**ater, **A**ir, **G**as, **E**lectricity, **S**team)

- Energy Consumption
- Energy Cost
- Energy Drivers
  - Activity Drivers (e.g. operating hours, tons per hour, etc.)
  - Condition Drivers (e.g. tariffs, weather, etc.)

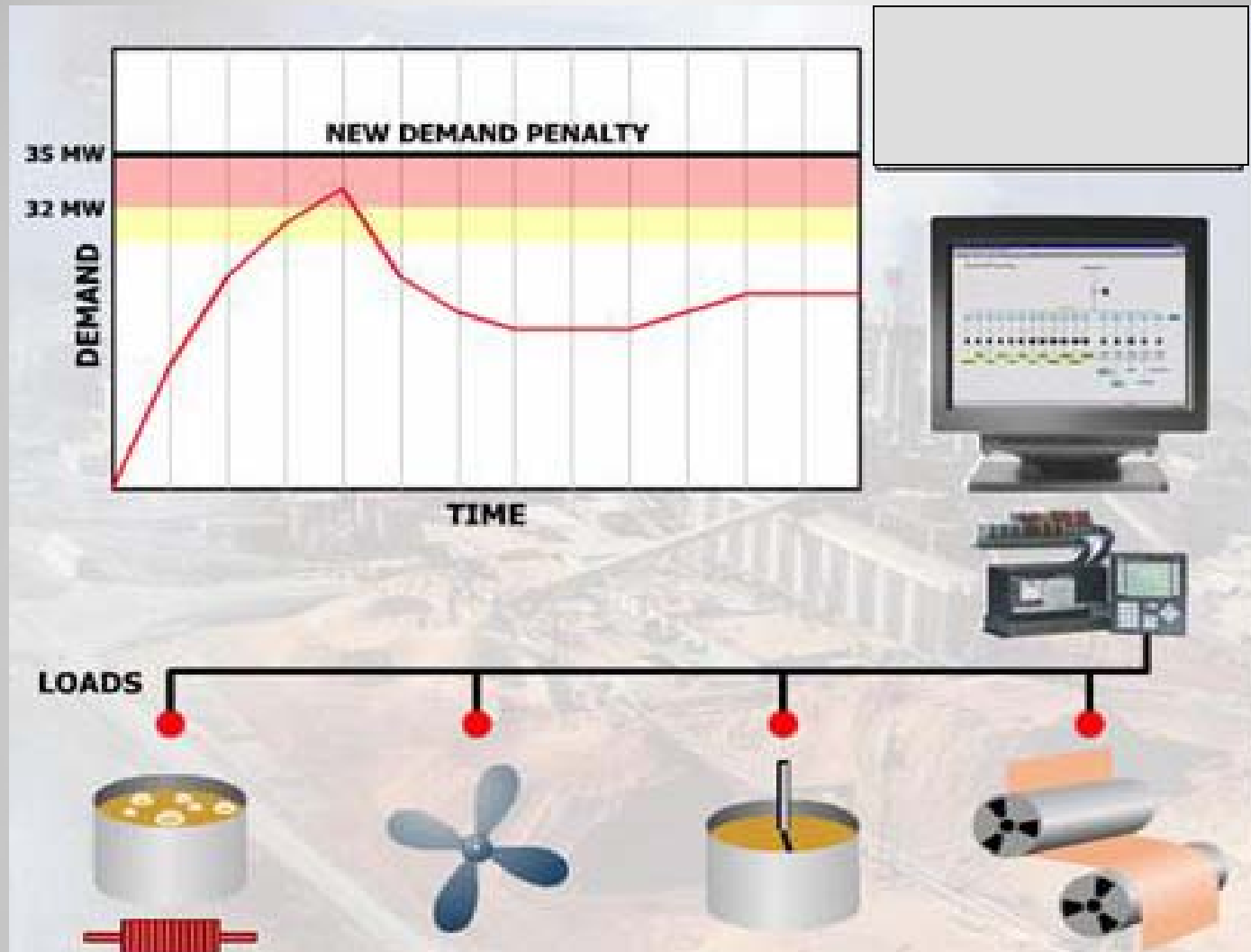
# Enterprise Energy Management Supply Chain Network Diagram Example



# Enterprise Energy Management Plant Process Control Diagram Example



# Enterprise Energy Management Plant Process Control Diagram Example



# ENTERPRISE ASSET MANAGEMENT

- **Enterprise Asset Management (EAM):** Technology designed to maximize performance of company-wide physical assets by:
  - Extensive asset management information systems functionality
  - Computerized Maintenance Management Systems (CMMS) including predictive and preventive maintenance
  - Stores/Materials Management

# **Examples of Datastream EAM Customers**

- **SmithKline Beechman**
- **Fuji Photo Film**
- **3M Belgium**
- **Lucent Technologies**
- **Xerox, Inc.**
- **Siemens**
- **Sprint**
- **AT&T Wireless**
- **Dolphin  
Telecommunications**
- **Lipton**
- **ChevronTexaco**
- **Southern Nuclear**
- **NASA**
- **Paris Metro**
- **First Group America**
- **US West**
- **Slovnaft Refinery**
- **American Airlines**
- **Trinidad & Tobago National  
Petroleum**
- **Glaxo Wellcome**
- **Lucent Technologies**





**Asset Management** – Identifies, tracks, locates, analyzes, warranty tracking

**Work Management** – Work orders, PM's, history, scheduling

**Inspection Management** – Condition based and risk based management of assets

**Materials Management** – Streamlines part and material management with online inventory

**Projects** – Allows large projects to be divided into more manageable subprojects and import/export to MS Project

**Purchasing Management** – iProcure integration for conducting purchasing activity

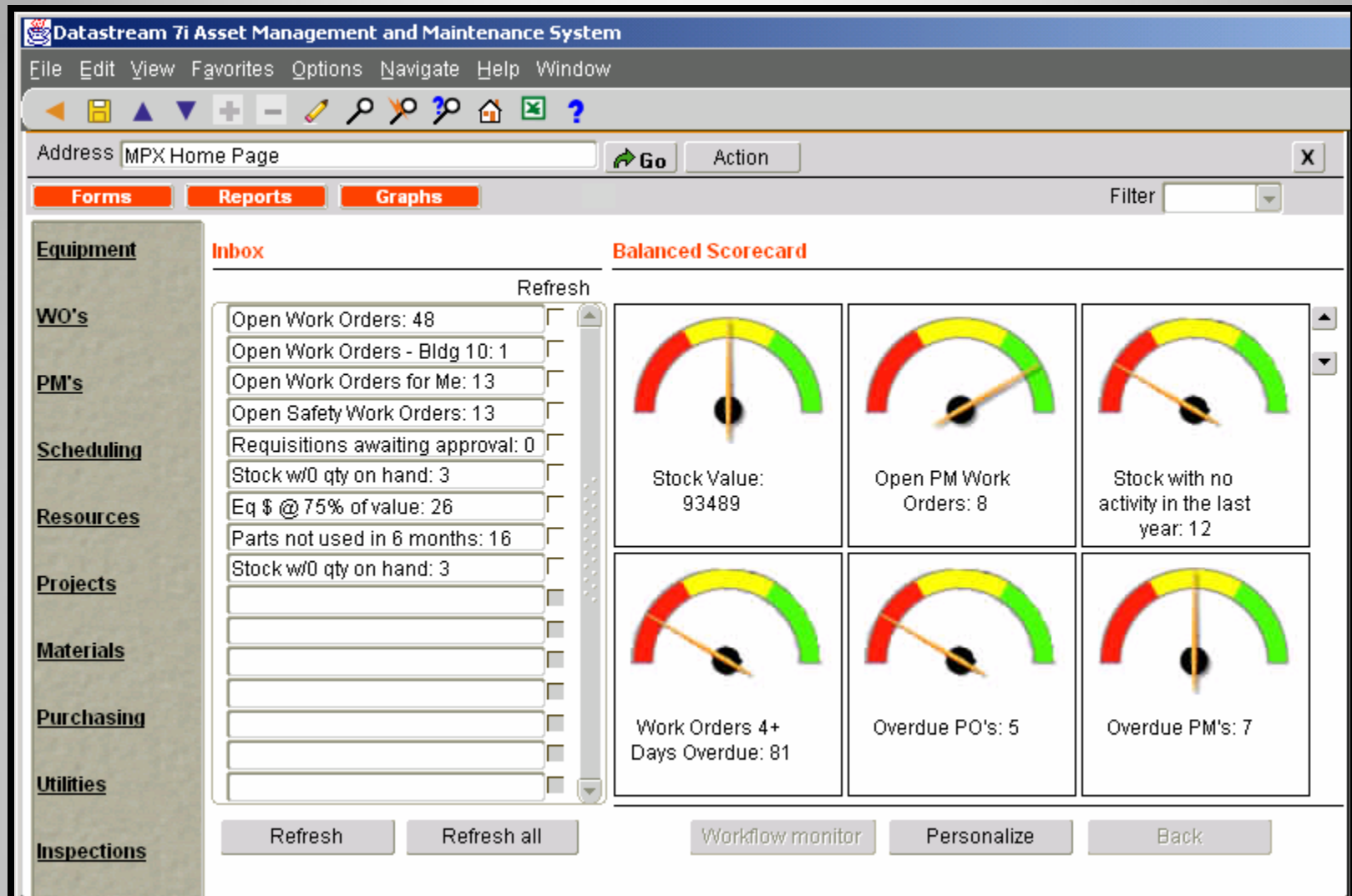
**Budget Management** – Captures expenditures

**Commercial Services** – Allows business unit to charge costs back to customers

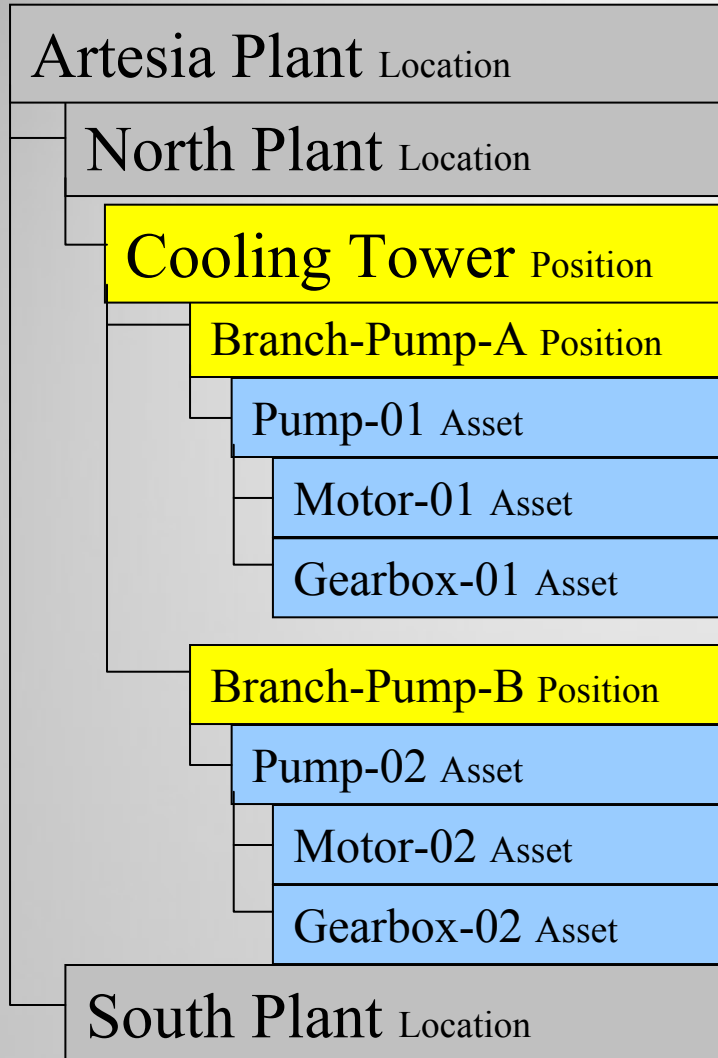
**Data Collection** – Allows automated collection of data (meters, PLC readings, work orders, etc.)

**API Set** – Allows data to be brought in from outside applications

# Datastream 7i Dashboards



# Datastream 7i Asset Management



•Systems

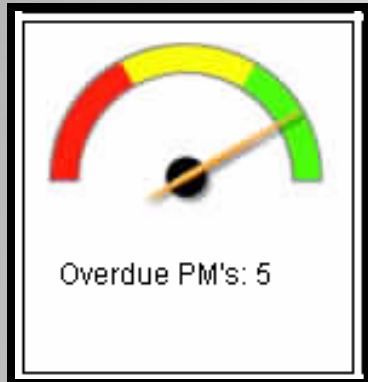
•Locations

•Function/Position

•Physical Assets

# Datastream 7i Preventive Maintenance

**PM Module – One time set up allow PM's to predictably generate based on usage, time or calendar. Tasks/ labor and materials are already assigned/reserved and revision control can be turned on allowing control of changes while maintaining historical PM information**



**Datastream 7i Enterprise v7.0.1 Asset Management and Maintenance System**

File Edit View Favorites Options Navigate Help Window

Address   Action Equip Assigned to PM

Translations | Comments Filter

**Equipment** List view Record view Comments Activities WO's Calendar Equipment Revision control

PM

Organization  Organization 1

Class  Status  Revision  ☐ Out of service

**PM Details**

Priority  High

WO type  Preventive Maintenance

Duration  ☐ Work package PM Plan

**Scheduling Data**

Period (days)

Estimated workload  People required  Calculated workload

Meter interval   Hour\*

Nesting reference  PM type

Ok window %  Near window %  Release window %

# Datastream 7i Preventive Maintenance

**Historical Review – ability to quickly find what the root problem is and correct the problem rather than “band aiding” - System actively tracks and analyzes failures allowing preventative maintenance rather than crisis management.**



**Datastream 7i Asset Management and Maintenance System**

File Edit View Favorites Options Navigate Help Window

Address History of equipment Go Action X

Filter

Equipment A P1 ORG1 Pump

☒ WO's

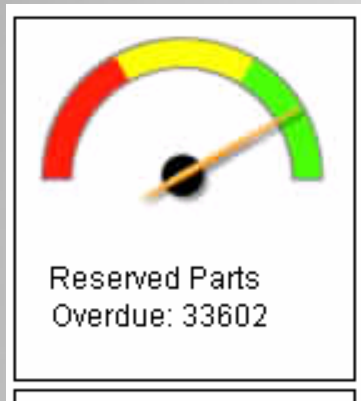
Event	Type	Description	WO type	Problem	Cause c	Failure c	Action co	Completed
10259	JOB	replace seals	BRKD	LEAK	ITEM	SEAL	REPLACED	24-OCT-2001 11:1
10313	JOB	pump leaking	TO	LEAK	TOOL	SEAL	NEW-INST	03-DEC-2001 10:0
10314	JOB	pump leaking	TO	LEAK	TRAIN	BBELT	REPLACED	28-NOV-2001 11:0
10258	JOB	Motor overheating	BRKD	SMK	TOOL	SEAL	NEW-INST	24-OCT-2001 11:1
10260	JOB	Check Idle	BRKD	VIB	ITEM	INSTAL	REPLACED	24-OCT-2001 11:2
10261	JOB	belt making noise/vibrating	BRKD	VIB	TOOL	BBELT	REPLACED	09-NOV-2001 13:1
10286	JOB	grind plate	TO					06-NOV-2001 07:5

Activities Parts Work requested Work completed Tools

Part	Part org	Description	Quantity	Material cost	Store
10001	*	Seal, Shaft	1	4.5	MA-1
10005	*	Seal, Water	1	2	MA-1
10006	*	Gasket	1	2	MA-1

# Datastream 7i Materials Management

**Materials Management – integrates Inventory/iProcure to Maintenance reducing inventory values due to streamlining the process – promotes “just in time” buying, consignment stock**



**Datastream 7i Asset Management and Maintenance System**

File Edit View Favorites Options Navigate Help Window

Address Equipment Go Action

Translations | Parts associated\* | Permits\* | Documents\* | Comments\* | Custom fields Filter

**Equipment** List view Record view Comment Custom fields Events Costs Readings Warranty Equip structure

Equipment PUMP N0.1 Main Pump

Organization ORG1 Organization 1 Type Asset

Dept PRD1

Class A002

Category PU-HVY

Profile

**Hierarchy**

Parent

Location

Position P1.LS.HP.HF

**PM Details**

Manufacturer MANNESMAN

Serial number PV7-1X/63-7

Commission date 11-DEC-200

Meter unit HUR

PM Plan

**Parts associated with Equipment (PUMP N0.1)**

Part	Description
03210000	Bearing, 3/4"
10000	Pump, Boile
10001	Seal, Shaft
10002	Impeller, Pu
10003	Gasket, Valv
10004	Filter, Water
10005	Seal, Water

Comment

**Datastream 7i Asset Management and Maintenance System**

File Edit View Favorites Options Navigate Help Window

Address Stock Go Action

Comments

**Equipment** List view Record view Comment Bins per store Assets per st... Outst orders Reserved it... Repair details

Store MA-1 Main Store Stock quantity 2

Part 03210000 ORG1 Bearing, 3/4"

Class

**Inventory Control**

Minimum quantity 4 Reorder level 24 On demand

Maximum quantity 29 Order quantity 5 UOM EA

Cycle count date 27-NOV-2001 ABC class A Tracking method TRPQ

Preferred supplier MSC ORG1 MSC

Preferred store

Lead time 5 Record stockouts Consignment item

**Pricing Summary**

Price type A Average price Credit balance

Base price 350 Average price 350

Last price 360.56 Standard price 350

# Datastream 7i Buy (iProcure)

- Stock, non stock and services supported
- On dock receiving
- Individual user approval authority
- Complete RFQ functionality
- Fully integrated with iProcure allowing for quick turn around
- Automated reorder activity for stock items
- All parts retain a part number allowing for historical tracking of directs/stock
- Supplier evaluation

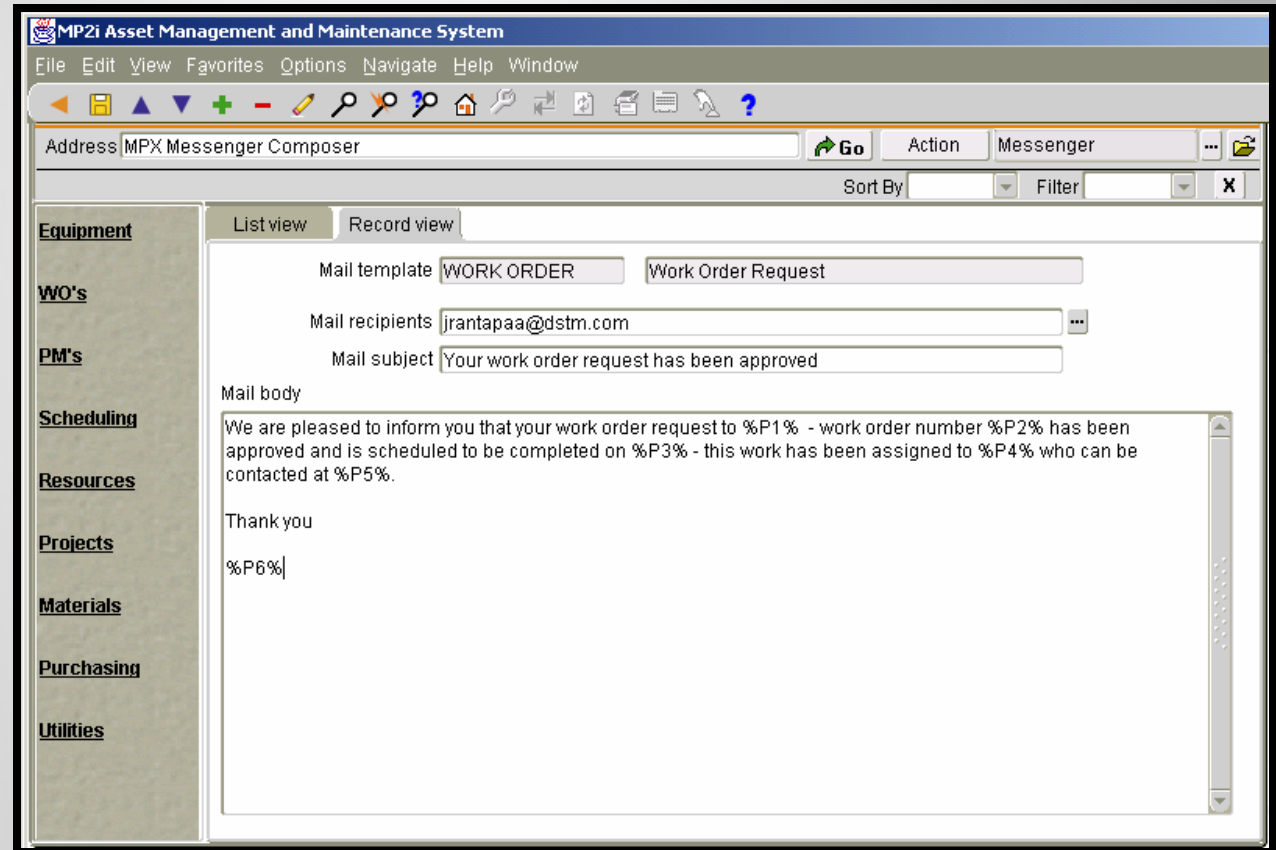
The screenshot displays the MP2i Asset Management and Maintenance System interface. The top window shows a search for 'PO's - ?\*X' with a 'Go' button and a 'Print PO' button. Below the search bar, there are tabs for 'List view', 'Record view', 'Comment', 'Parts', 'Services', and 'Clauses'. The 'Record view' tab is selected, showing details for Order 10000, Line 1, Type PS, Status A, and a 'Purchase Order' label. The 'Organization' is set to '\*' and the 'Default organization' is also '\*'. The 'Class' is empty.

The bottom window shows a detailed view of the Purchase Order. It includes a 'Supplier Info' section with 'For s' and 'Origin' fields. The 'Delivery address' and 'Source c' fields are also present. The 'Approval' section shows 'Authoriza' and 'Default app' fields. The 'Part / WO Details' section shows 'Part 10001', 'Reference 4KE98', 'Equip', and 'Cost code'. The 'Order details' section shows 'Order quantity 1', 'Unit BOX', 'UOM EA', 'Value 100', 'Unit price 100', 'Discount % 5', 'Due date 02-JUN-2001', 'Lead time 3', 'Contract 10000', 'Conversion factor 10', 'Quantity received 10', 'On-dock qty', 'Exchange rate 1', 'Tax code 1 TX01', 'Tax code 2', and 'Total tax amount'. There are also buttons for 'Extra charges/discounts', 'Comments', and a 'Freeze rate' checkbox.



# Datastream 7i Automated Alerts

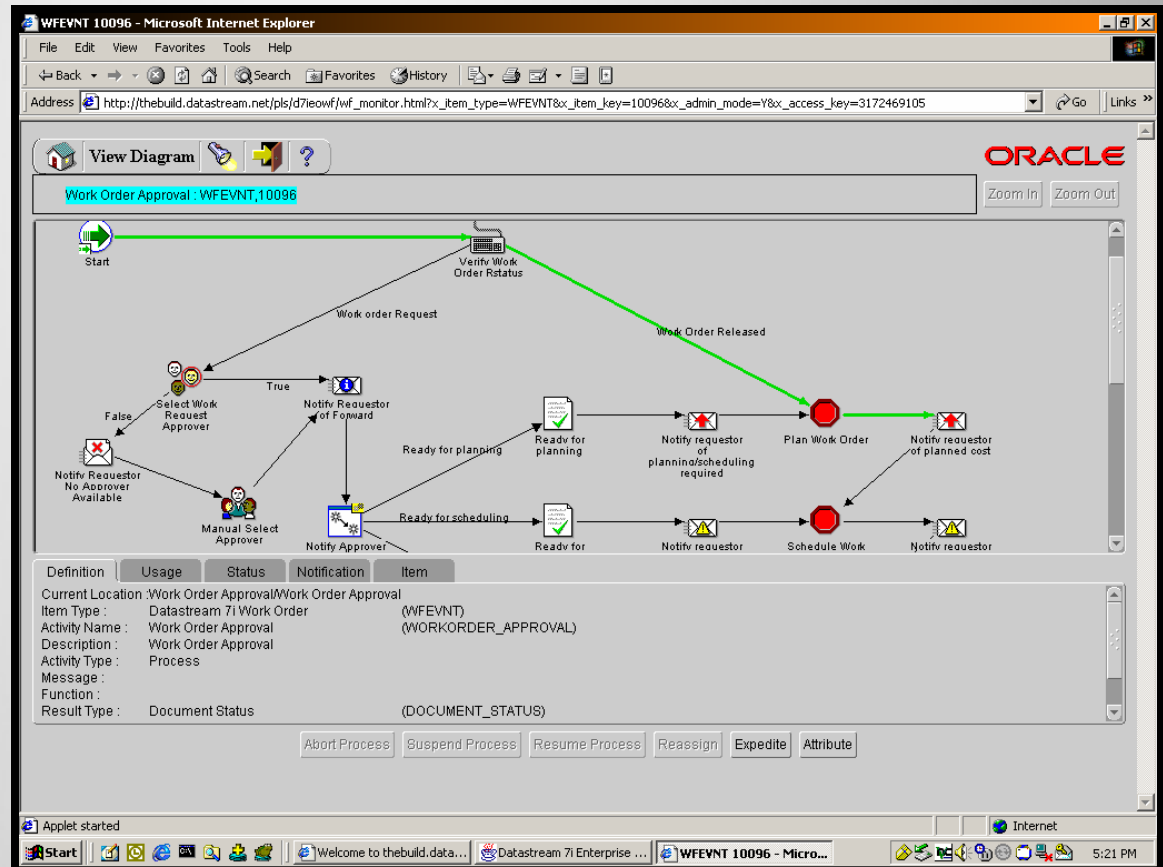
- **Messenger – One way tool**
- **Sends e-mail/page based on status changes**
- **Fully configurable**
- **Allows automatic notification to customers**
- **Allows ability to page technicians to perform work**
- **Can notify customers of status of their requests**



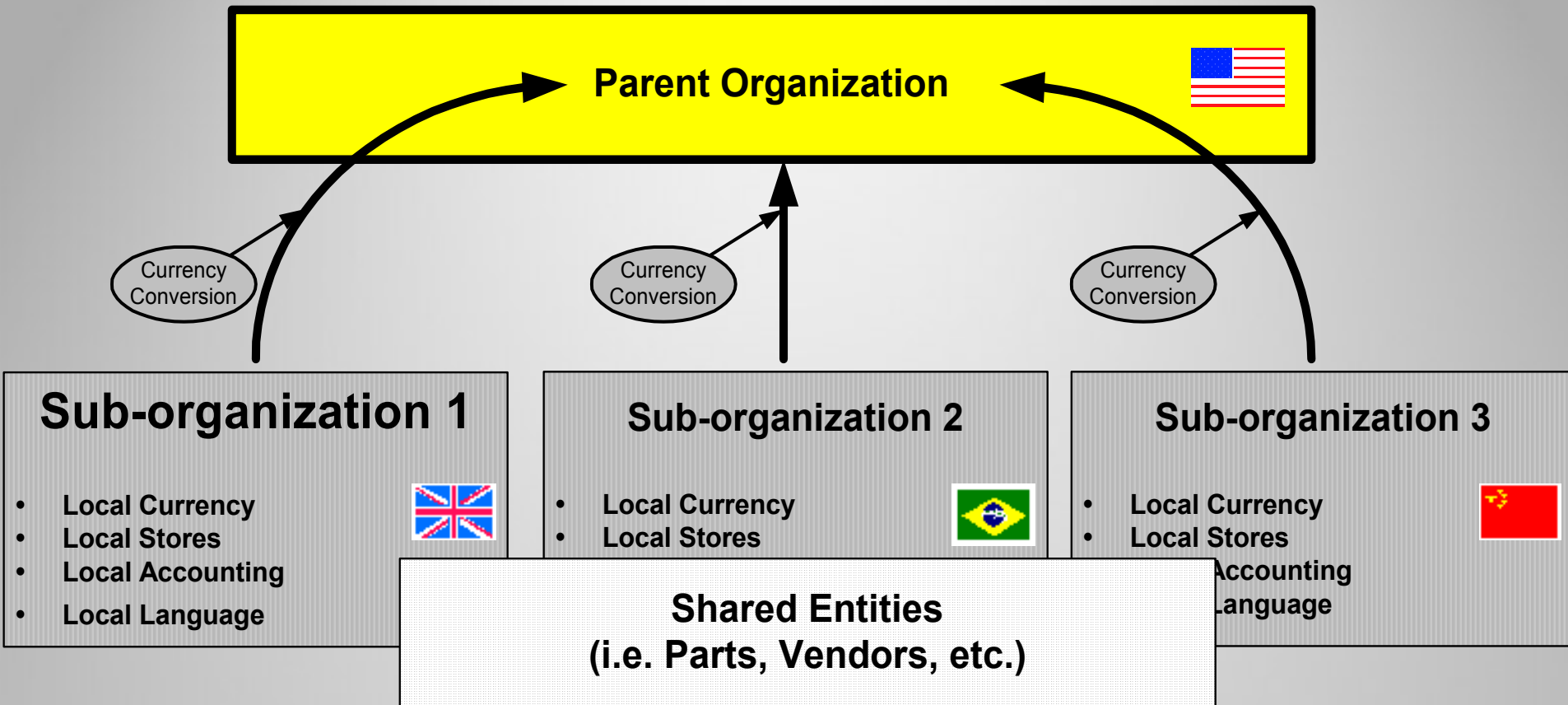


# Datastream 7i Automated Alerts

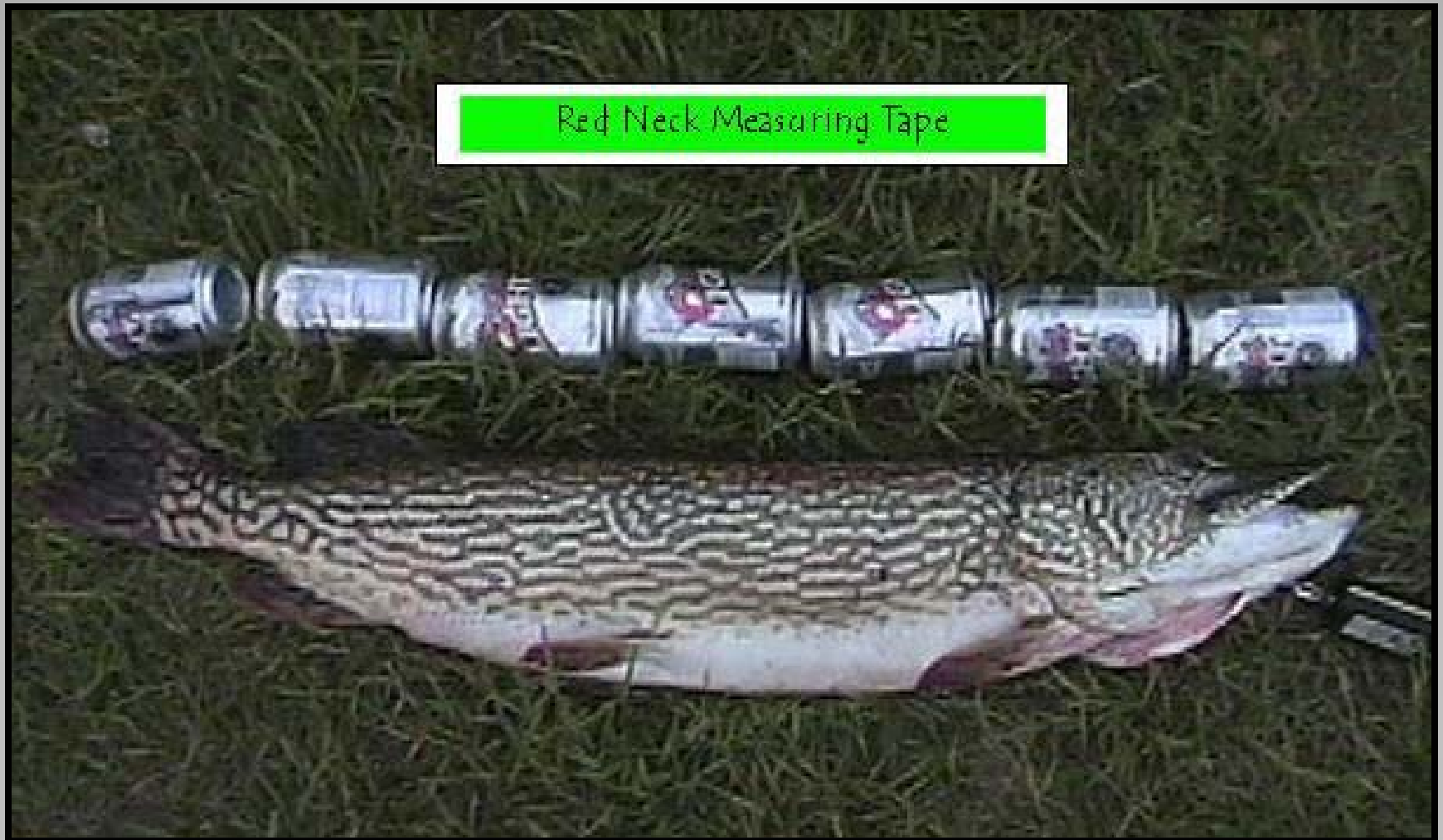
- Interactive graphical tool
- Can be set up based on customer business processes
- E-mail, page and/or interact with MP5 from outside applications
- Provides multiple paths for management – including remote monitoring/approval processes
- Internal authority control built in
- 4 base flows:
  - Work Requests
  - Purchase Requests
  - Purchase Orders
  - Quotations



# Datastream 7i Multi-Org Security



**Bottom Line:** *Improvements in Data Acquisition, Metrics & Analysis are Key Requirements to Enterprise Energy & Asset Management Optimization*



# Questions?

Glen A. Lewis

Del Monte Foods – Western Region Office\*

2 Nestle Way

Lathrop, CA 95330

(209) 547-7226

[glen.lewis@delmonte.com](mailto:glen.lewis@delmonte.com)

\*New Address Effective 1 Nov 04